

CASE REPORT

External cervical resorption associated with localized gingival overgrowth

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Abstract

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Aim To describe the presentation and management of an unusual lesion of external cervical resorption.

Summary The salient features of this unusual presentation of the external cervical resorption with localized gingival overgrowth, and the resorption located almost wholly on the labial aspect of a maxillary incisor crown are described. Extensive loss of enamel had occurred. The management and possible aetiology of the resorptive lesion are discussed.

Key learning points

- Localized gingival overgrowth can be associated with external cervical resorption.
- The cervical resorption does not necessarily indicate pulp canal infection and the need for root-canal treatment.

Keywords: external cervical resorption, gingival enlargement.

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Introduction

External cervical resorption is a relatively distinct clinical entity, although its wide spectrum of clinical presentations has resulted in its designation by different names such as progressive intradental resorption (Lepp 1969, Barclay 1993) and invasive resorption (Bakland 1992). It is defined as a localized resorptive process that commences on the surface of the root below the epithelial attachment and the coronal aspect of the supporting alveolar process, namely the zone of the connective tissue attachment (Tronstad 1988). The clinical presentation is determined by the rate and the direction of the spread of the resorptive front. The lesions are rarely symptomatic but may be associated with bleeding from the hyperaemic and often proliferative tissue which occupies the resorption defect.

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Coronal advance of the resorptive process may undermine the enamel giving it a pink hue. Sometimes, it is possible to probe the resorptive defect through the gingival margin, and under such circumstances the dentine is found to be firm (Southam 1967).

The radiographic appearance of the cervical resorption is characteristic and often the presenting feature (Gartner *et al.* 1976, Gulabivala & Searson 1995). Relatively uniform progress of the resorption over the entire front results in a macroscopically concave cavity with a radiographic appearance of uniform radiolucency and a smooth, regular outline. However, a nonuniform preferential spread is also possible and may result in 'fingers' of resorptive tissue extending in different directions, often with little lateral spread at the site of initiation. This is observed radiographically as an irregular, diffuse radiolucency of nonuniform radiodensity (Makkes & van Velzen 1975). Consistent with other types of external resorption, the outline of the root canal remains continuous and is evident through the radiolucent lesion. This is owing to the presence of undefined inhibitors which prevent advance of the lesion beyond the unmineralized predentine (Wedenberg 1987). The resorption may also involve adjacent alveolar bone, giving the appearance of an intrabony defect (Tronstad 1988).

Although the precise pathogenic mechanisms and the natural history of external cervical resorption are only loosely identified, a number of possible contributory factors have been implicated. These include trauma, orthodontic tooth movement, dentoalveolar surgery and periodontal disease and its treatment (Tronstad 1988, Bakland 1992). In the endodontic literature, intracoronary bleaching is the most commonly cited aetiological factor (Goon *et al.* 1986, MacIsaac & Hoen 1994). The proposed theory of pathogenesis involves predisposing root conditions and perpetuating bacterial factors. It is hypothesized that an initial physical injury to the root surface (Tronstad 1988) or the presence of natural cementum defects (Rotstein *et al.* 1991) may predispose of resorption by altered host tissue modified by a bacterially driven stimulus. The micro-organisms tip the balance from a potentially reversible physiological resorptive process to a progressive pathological one (Kerr 1961, Dragoo & Sullivan 1973, Tronstad 1988).

The present case report describes an unusual presentation of external cervical resorption. The salient features presented were the localized gingival overgrowth and associated resorption located almost wholly on the labial aspect of the maxillary incisor crown involving the enamel. The management and possible aetiology of the resorptive lesion are discussed.

Report

A 29-year-old Caucasian male patient with localized gingival overgrowth associated with a maxillary central incisor was referred by his general dental practitioner to the Periodontology Department of the Eastman Dental Institute and Hospital. The presented complaint was swollen and bleeding gums which had particularly worsened over the past 2 years. He was also aware that his gums were especially swollen around one of his upper front teeth. Although the patient had first noticed this 6–7 years earlier, he felt that the lesion had increased in size over the years and was now an aesthetic concern.

The medical history was unremarkable and the patient had been a regular dental attendee with half-yearly visits to the hygienist over the past 2 years. On extra-oral examination, the lips were found to be incompetent with a high smile line exposing the uneven gingival contour. Intraorally, the oral hygiene was poor with generalized inflammation of the gingival tissues and immediate bleeding on probing. Probing depths of 5 mm were noted in the maxillary anterior region, especially around tooth 21 and the molar segments. Tooth 21 had an irregular band of gingival fibrous overgrowth (8 mm × 3 mm) covering approximately one-third of the labial surface and involving the gingival margin (Fig. 1). This tissue coronally appeared to be located within a mid-labial cavity in the crown. The coronal aspect of the cavity could just be probed. The irregularity of the gingival margin between teeth 11, 21 and



Figure 1 Labial view of anterior gingivae on initial presentation. Note, the enlarged anterior mandibular gingivae associated with occlusal trauma from the maxillary incisors.

22 gave a poor appearance. It was noted that the anterior mandibular gingivae were enlarged and inflamed (Fig. 1). This was exacerbated by occlusal trauma from the maxillary central incisors. Tooth 21 also had a mesial restoration. The remaining dentition was minimally restored. All of the maxillary incisors gave positive responses to vitality testing with electric pulp test and ethyl chloride. Periapical radiographs revealed an irregular but well-demarcated area of radiolucency at the cemento–enamel junction extending coronally (Fig. 2).

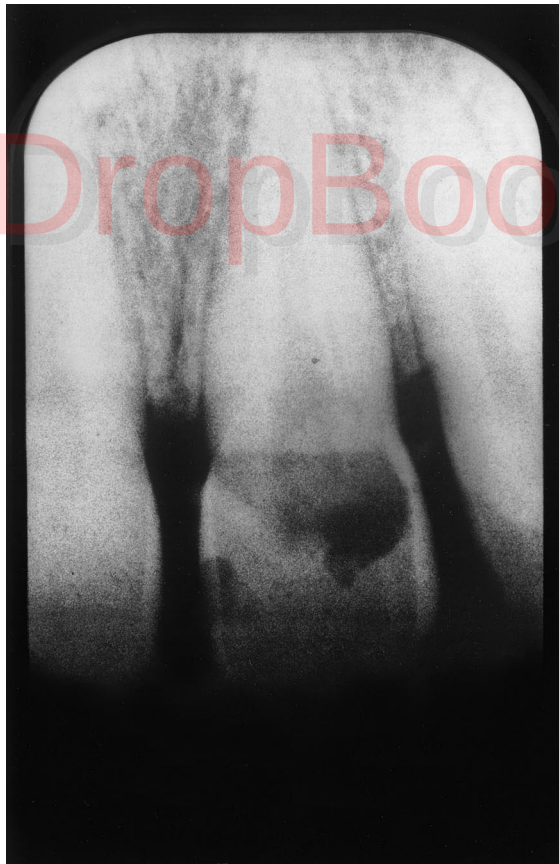


Figure 2 Long cone periapical radiograph of tooth 21 at initial presentation.

A provisional diagnosis of the external cervical resorption associated with tooth 21 and mild adult periodontitis was made. Further questioning revealed no history of trauma or vital bleaching to the maxillary incisors.

The management of the present case was carried out in two phases:

1 The first phase of treatment was aimed at controlling gingival inflammation. This was achieved by oral hygiene instruction, supra- and subgingival debridement. At the end of this phase, the response to the treatment was evaluated. The response was good with a significant improvement in the oral hygiene and overall periodontal health. However, the gingival overgrowth associated with tooth 21 persisted with a 5 mm probing depth labially.

2 The second (corrective) phase of the treatment was aimed at improving the appearance at tooth 21 by surgical removal of the band of gingival overgrowth and to investigate the residual resorption cavity. As the main concern was the aesthetic contour of the gingivae, the outline of the adjacent gingival margins at teeth 11 and 22 were noted prior to surgery. The surgical procedure was carried out under local anaesthesia by raising a full thickness inverse bevel flap followed by excision of the band of overgrown gingival tissue, simultaneously re-contouring the tissues. The flap was extended to the adjacent incisors to maintain an even gingival contour. The excised tissue was submitted for histopathological examination. The excised gingival tissue was housed within the labial cavity and appeared to have contributed to its coronal mid-labial extension. The surface periphery of the resorptive cavity was bordered almost completely by enamel and extended into the mesial and distal embrasures. Apically, the cemento–enamel junction was marginally involved and the rest of the root appeared intact (Fig. 3). There was mild localized bone loss associated with tooth 21 compared with the alveolar crest level of the adjacent teeth which was in line with the cemento–enamel junction. The granulation tissue and debris were removed from the cavity. No soft dentine was present. The resorptive defect was examined, and the bone was smoothed and re-shaped at tooth 11 to obtain an even contour. The cavity was temporarily restored with conventional glass ionomer cement (Ketac Fil Aplicap, ESPE, Seefeld, Germany) using rubber-dam isolation. The flap was repositioned apically and sutured. At suture removal 1 week later, healing had been uneventful and the desired gingival contour achieved. The patient was satisfied with the improved appearance, despite a slight 'yellowing' of the restoration (Fig. 4).

Histological evaluation of the excised tissues confirmed the presence of relatively acellular fibrous connective tissue and isolated foci of inflammation, one of which was particularly dense in the corium. The glass ionomer cement restoration was subsequently replaced with a composite resin restoration (Herculite XRV, Kerr, Orange, CA, USA) in order

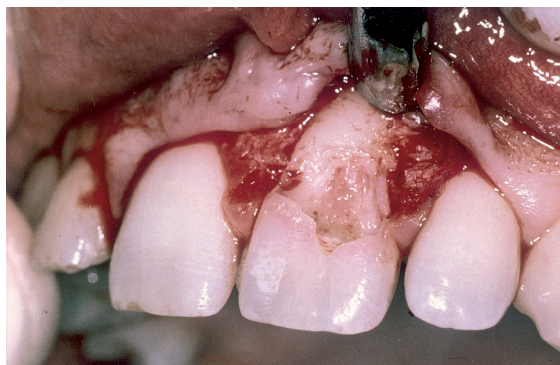


Figure 3 Extent of resorption lesion after removal of granulation tissue.



Figure 4 Labial view demonstrating restoration of resorption defect associated with maxillary left central incisor with conventional glass ionomer cement restoration.



Figure 5 Labial view of gingivae and replacement restoration relating to maxillary left central incisor at 6 months postsurgery.

to improve the appearance (Fig. 5). Additionally, the mesial restoration on the tooth was polished.

The patient was recalled at 6, 12, 24 and 36 months (Fig. 6). At 36 months, the patient remained happy with the aesthetic outcome, with no recurrence of the lesion. The patient continues to maintain a high standard of oral hygiene and will be kept under long-term review.

Discussion

The present case describes an unusual presentation of external cervical resorption, bordered at the surface by enamel and associated with localized gingival overgrowth. The localized gingival overgrowth, of which fibrous epulis is the most common example, has been well documented (Macleod & Soames 1987). However, none have been reported in association with external cervical resorption. More typically, the fibrous epulis is seen mainly in the anterior maxilla and usually presents interdentally localized to 1 or 2 teeth (Soames & Southam 1993). The most common cause of these lesions is chronic irritation of the gingival tissue caused by subgingival plaque, calculus or restoration margins.



Figure 6 Long cone periapical radiograph of tooth 21 at 36 months.

In the present case, the aetiological origin was not proven, but it is highly likely that the inflammatory changes in the periodontium induced by the inadequate plaque control played a role in the initiation of the resorption. The enlarging resorption cavity and associated advancing inflamed gingival tissue probably contributed to the exacerbation of the poor oral hygiene resulting in a vicious cycle perpetuating the gingival overgrowth and labial resorption. The presence of natural cementum defects (Rotstein *et al.* 1991) or physical injuries to the root surface (Tronstad 1988) have been quoted as predisposing factors in the pathogenesis of root resorption. However, Heithersay (1999) reported that 16.4% of the 257 teeth analyzed did not have a history of predisposing factors. He suggested that some of these cases may have had undetectable developmental defects, such as hypoplasia or hypomineralization of cementum. In this case, it is possible that a predisposing defect may have been caused by regular periodontal debridement provided by the hygienist in the dental practice.

The unusual presentation of the resorption cavity bordered at the surface by enamel and involving loss of enamel may be explained by the close proximity of periodontal connective tissues to the resorption site. Nyman *et al.* (1980) demonstrated in their study that the close relationship of periodontal connective tissues to a root surface deprived of cementum, and periodontal ligament cells resulted in several of the specimens demonstrating significant root resorption. In this case, the periodontal connective tissues were in close proximity to

the denuded root surface and enamel because the alveolar crest was at the level of the cemento–enamel junction. Thus, the periodontal connective tissues from the gingivae cannot run horizontally and attach into the enamel. Instead, the fibres run apically parallel to the angular crest allowing for insertion of the connective tissue fibres just apical to the cemento–enamel junction. This relationship has been described by Garbar & Salama (1996) as type 1-B. One may hypothesize that the resorption began on the denuded root surface (close to the cemento–enamel junction) and progressed to involve mainly enamel because of the proximity of the periodontal connective tissue fibres. The minimal localized bone loss seen at tooth 21 (Fig. 3) may have occurred because of the persistent localized inflammatory changes in the periodontium.

In this case, clinical and radiographic examination indicated that the pulp on tooth 21 was vital and long-term follow-up has confirmed this. Occasionally, pulpal exposure may be found during removal of inflamed tissue from the resorption cavity. The exposure rarely results from direct communication of the inflamed tissue (Makkes & van Velzen 1975, Wedenberg & Zetterqvist 1987) in the resorption cavity with the pulp, because of intervening predentine (Wedenberg 1987). The presence of a communication is difficult to ascertain pre-surgery. More commonly, pulp exposure occurs owing to the accidental mechanical removal of the thin predentine separating the inflamed tissue from the pulp. When the pulp is exposed, options for treatment are direct pulp-capping or root-canal treatment (Gulabivala & Searson 1995). When root-canal treatment is necessary, it is best performed as a single-visit procedure during surgery, so that a permanent restoration may engage the resorption cavity and the root canal for sufficient retention. This also avoids the risk of accidental displacement of a restoration during a second visit for root-canal obturation. The combined endodontic/surgical approach is also helpful in preventing the complication of persistent bleeding into the root-canal system during treatment.

The aims of the treatment in the present case were to prevent further resorption, and to improve gingival aesthetics. The former aim could not be guaranteed as no specific aetiology had been identified. However, by eliminating probable aetiological factors, e.g. inflamed and overgrown soft tissue (Kerr 1961, Dragoo & Sullivan 1973, Tronstad 1988), the resorption process was arrested. Access to the resorption cavity was obtained surgically. Additionally, surgery facilitated improvement in gingival aesthetics by apical repositioning of the flap. At the 3-year recall, no recurrence of the lesion was noted.

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